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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,188	01/15/2004	In Su Kim	20063/OG03-046	5382

34431 7590 12/21/2005

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EXAMINER
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SMITH, BRADLEY

ART UNIT	PAPER NUMBER
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2891

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/758,188	KIM, IN SU	
	Examiner	Art Unit	
	Bradley K. Smith	2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10/5/05.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☒ Claim(s) 7-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>search notes</u>                       |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. (KR2003094442) in view of Okumura et al. Dong et al. disclose depositing an oxide layer, a first conducting layer for a floating gate, a dielectric layer, and a second conducting layer for a control gate in sequence on a semiconductor substrate including a device isolation layer; forming gates by removing some part of the oxide layer, the first conducting layer, the dielectric layer, and the second conducting layer; forming a mask pattern for a self-aligned source over the substrate including the gates', removing the device isolation layer exposed between the gates; performing an ion implantation process', and eliminating damage generated during the ion implantation process or the removal process of the device isolation layer ( see detailed description). With regards to claim 3 Dong et al. disclose the first and second conductive layers are formed of polysilicon. With regards to claim 4, Dong et al. disclose and ONO structure (212, 213, 214). With respect to claim 5, Dong et al. inherently disclose the use of dry etching. However Dong et al. fails to disclose washing the substrate and forming an insulation layer, whereas Okumura et al. disclose washing the substrate and forming an insulation layer. Therefore it would have been obvious to one of ordinary skill in the art

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at the time the invention was made to combine the teachings of Dong et al. and Okumura et al. because washing the substrate would remove any defects that would interfere in the formation of the insulation layer.

2. Claim 1, 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US Patent 6,784,061) in view of Okumura et al. Yang disclose depositing an oxide layer, a first conducting layer for a floating gate, a dielectric layer, and a second conducting layer for a control gate in sequence on a semiconductor substrate including a device isolation layer; forming gates by removing some part of the oxide layer, the first conducting layer, the dielectric layer, and the second conducting layer; forming a mask pattern for a self-aligned source over the substrate including the gates', removing the device isolation layer exposed between the gates; performing an ion implantation process', and eliminating damage generated during the ion implantation process or the removal process of the device isolation layer (eliminating the damage would be inherent since the ion implant has to be annealed in order to activate the ions) (see figure 6 and column 3 lines 5-25). With regards to claim 3 Yang et al. disclose the first and second conductive layers are formed of polysilicon (column 1 lines 60-65). With regards to claim 4, Yang et al. disclose an ONO structure (column 1 lines 60-65). With respect to claim 5, Yang et al. disclose the use of dry etching (column 3 lines 5-25). However Yang et al. fails to disclose washing the substrate and forming an insulation layer, whereas Okumura et al. disclose washing the substrate and forming an insulation layer. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Yang et al. and Okumura et al.

because washing the substrate would remove any defects that would interfere in the formation of the insulation layer.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US Patent 6,784,061) in view of Okumura et al. Yang et al. and Okumura disclose the claimed invention except for applying a top power between 800W and 1500W under a pressure between 100 mTorr and 300 mTorr. It would have been obvious to one of ordinary skill in the art at the time the invention was made to applying a top power between 800W and 1500W under a pressure between 100 mTorr and 300 mTorr, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Furthermore the particular power and pressure are well within normal parameters.

***Allowable Subject Matter***

3. Claims 7-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor suggests within the context of the entire claim, dry etch using  $\text{C}_4\text{F}_8$ ,  $\text{CHF}_3$ ,  $\text{O}_2$  and Ar at particular pressures (claim 7), the damage is removed by a chemical dry etch process (claims 8-12).

***Allowable Subject Matter***


The indicated allowability of claim 2 is withdrawn in view of the newly discovered reference(s) to Okumura.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is 571-272-1884. The examiner can normally be reached on 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bradley K Smith  
Primary Examiner  
Art Unit 2891